

Evaluation Of MTBE Analytical Field Results And Analysis of MTBE Plumes at California LUFT Sites. Anne Happel, Lawrence Livermore National Laboratory (LLNL), Edwin Beckenbach, University of California, Berkeley, Richard Rempel, State Water Resources Control Board, and Dave Rice, LLNL.

As part of an ongoing study evaluating the distribution, fate, intrinsic biodegradation, and remediation of MTBE in groundwater, we present results pertaining to the validity of field analytical data and preliminary results of MTBE plume characterization at LUFT sites in California. To address issues relating to analytical methods for MTBE detection and quantification, MTBE analyses by EPA Methods 8020 and 8240 from 98 groundwater samples collected from LUFT sites were compared. This data was evaluated for the occurrence of false positives and for the level of agreement between values reported by each analytical method. False positives occurred among 2% of the samples in this dataset, exclusively when high concentrations of gasoline compounds were present. These mis-identifications are attributed to the presence of other hydrocarbons such as 3-methylpentane, that may co-elute with MTBE under standard GC/PID conditions used for BTEX analysis. MTBE values reported by each of the methods were in agreement for 73% of samples containing low levels of gasoline compounds, however, for samples that differed significantly between methods, the 8020 value tended to be lower than the 8240 value. For samples with high levels of gasoline compounds, correlation between the methods decreased slightly to 62% and in some cases EPA 8020 tended to overestimate low concentrations of MTBE. Plume analysis involves a parallel approach of determining plume parameters such as length, mass and maximum concentration through best professional judgment and the implementation of a computer aided plume model fitting procedure. The approaches are compared and initial results are presented for the inferred relationship between benzene and MTBE plumes.

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